ICES WGDEEP REPORT 2017

ICES ADVISORY COMMITTEE

ICES CM 2017/ACOM:14

Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP)

24 April–1 May 2017

Copenhagen, Denmark

ICES International Council for the Exploration of the Sea

CIEM Conseil International pour l'Exploration de la Mer

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Recommended format for purposes of citation:

ICES. 2017. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), 24 April–1 May 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:14. 21 pp.

4.4 Ling (*Molva Molva*) in Division 5.a

4.4.1 The fishery

The fishery for ling in 5.a has not changed substantially in recent years. Around 150 longliners annually report catches of ling, around 50 gillnetters, around 60 trawlers and ten *Nephrops* boats. Most of ling in 5.a is caught on longlines and the proportion caught by that gear has increased since 2000 to around 65% in 2009–2016. At the same time the proportion caught by gillnets has decreased from 20–30% in 2000–2007 but the proportions have been going down since then to around 4% in 2016. Catches in trawls have varied less and have been at around 20% of Icelandic catches of ling in 5.a (Table 4.4.1).

Table 4.4.1. Ling in 5.a. Number of Icelandic boats and catches by fleet segment participating in the ling fishery in 5.a.

YEAR	NUMBER OF BOATS			CATCHES IN TONNES				SUM
	Longliners	Gillnetters	Trawlers	Longline	Gillnet	Trawl	Others	
2000	165	88	68	1537	703	729	236	3526
2001	146	114	57	1086	1056	492	223	3174
2002	128	92	56	1277	649	661	248	3111
2003	137	73	54	2207	453	580	336	3840
2004	144	67	68	2011	548	656	506	4000
2005	152	60	72	1948	517	1081	766	4596
2006	167	51	81	3733	634	1242	669	6577
2007	155	59	76	4044	667	1396	492	6889
2008	138	43	78	5002	509	1509	714	7993
2009	141	46	67	6230	747	1540	1096	9867
2010	156	50	68	6531	390	1537	1411	10 143
2011	151	58	59	5595	241	1677	1279	9060
2012	156	48	58	7477	264	1398	1551	10 952
2013	163	45	57	6781	354	2805	254	10 194
2014	128	30	60	10 342	673	2722	228	13 965
2015	159	44	58	7765	655	1913	1218	11 551
2016	137	46	60	5672	343	1339	369	8581

Most of the ling caught in 5.a by Icelandic longliners is caught at depths less than 300 m and by trawlers, less than 500 m (Figure 4.4.1). The main fishing grounds for ling in 5.a as observed from logbooks are in the south, southwestern and western part of the Icelandic shelf (Figure 4.4.2). The main trend in the spatial distribution of ling catches in 5.a according to logbook entries is the decreased proportion of catches caught in the southeast and increased catches on the western part of the shelf. Around 40% of ling catches are caught on the southwestern part of the shelf (Figure 4.4.3). In recent years the main fishing pressure has shifted towards shallower waters (Figure 4.4.1).

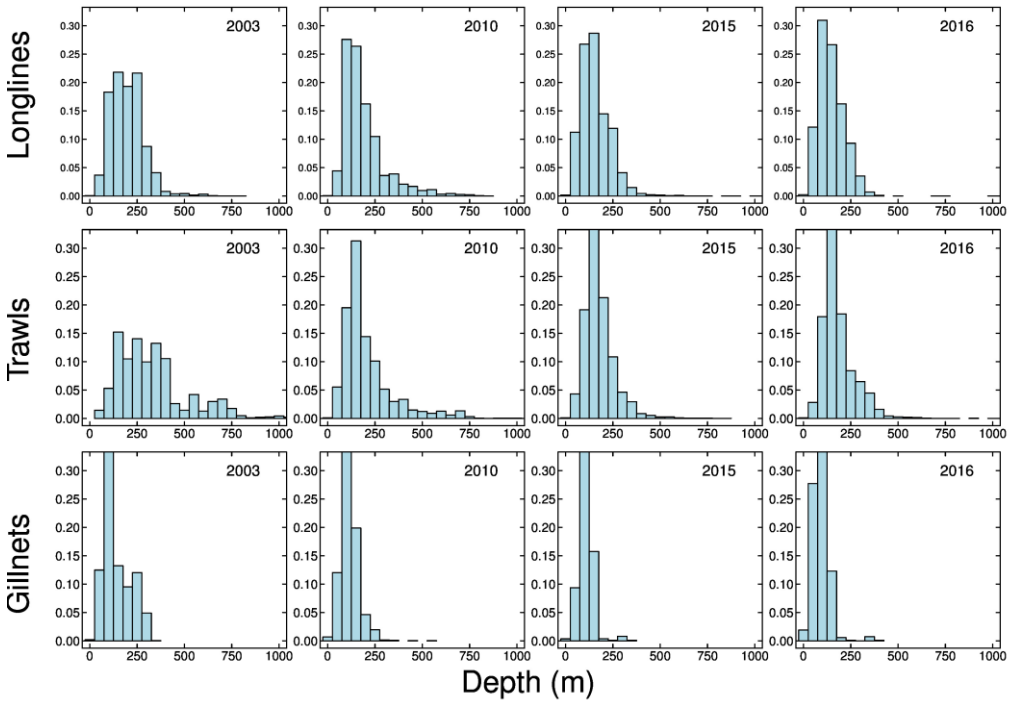

Figure 4.4.1. Ling in 5.a. Depth distribution of ling catches from longlines, trawls and gillnets from Icelandic logbooks.

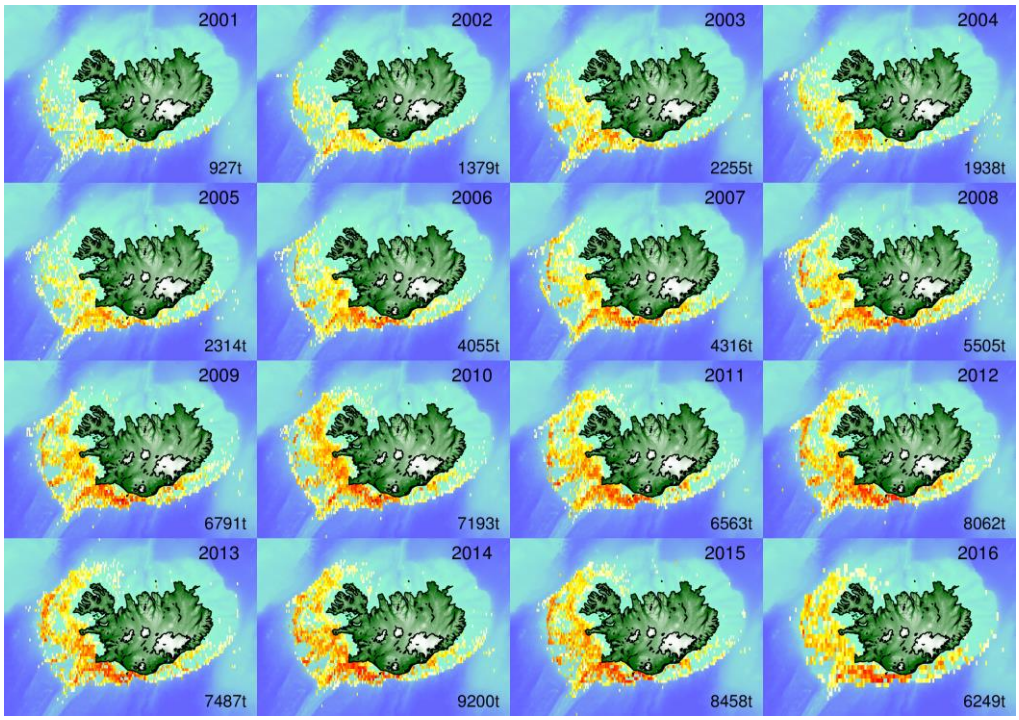

Figure 4.4.2. Ling in 5.a. Geographical distribution (tonnes/square mile) of the Icelandic longline ling fishery since 1998 as reported in logbooks by the Icelandic fleet.

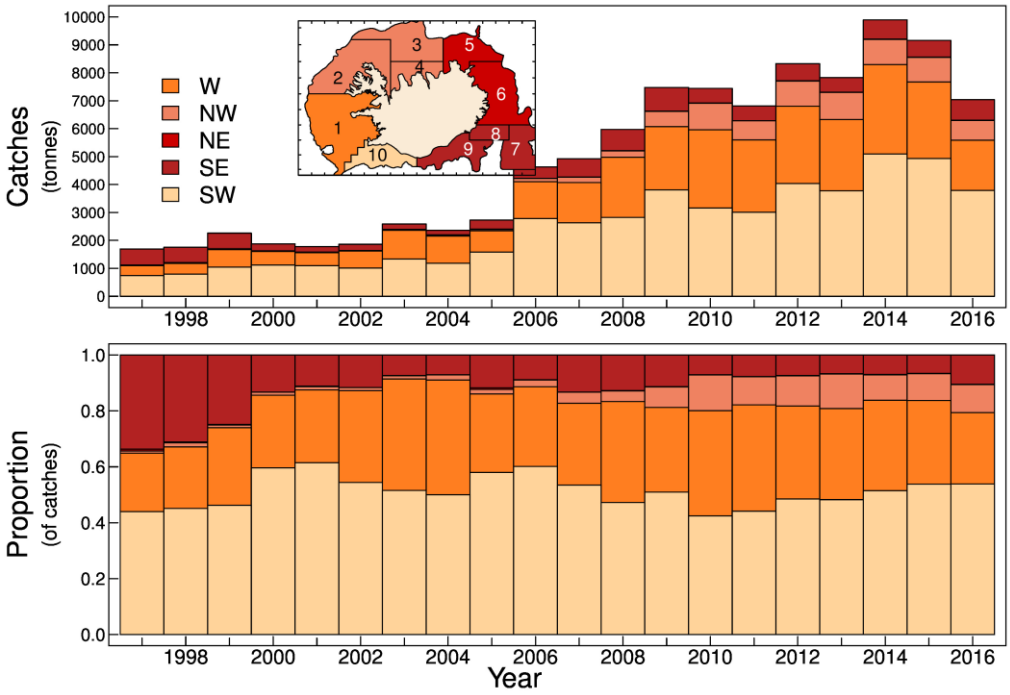

Figure 4.4.3. Ling in 5.a. Changes in spatial distribution of ling catches as recorded in Icelandic logbooks.

4.4.2 Landings trends

In 1950 to 1971 landings of ling in 5.a ranged between 7 kt to 15 kt. Landings decreased between 1972 and 2005 to between 3 kt to 7 kt as a result of foreign vessels being excluded from the Icelandic EEZ. In 2001 to 2010 catches increased substantially year on year and reached 11 kt in 2010 and remained at that level until 2014, apart from 2011 catches of 9.6 kt, when the catches increased to 16 kt. This catch level has not been reached since the early seventies. (Table 4.4.6 and Figure 4.4.4).

4.4.3 ICES Advice

The ICES advice for 2017 states: ICES advises on the basis of an MSY approach that catches should be no more than 9 343 t. All catches are assumed to be landed.

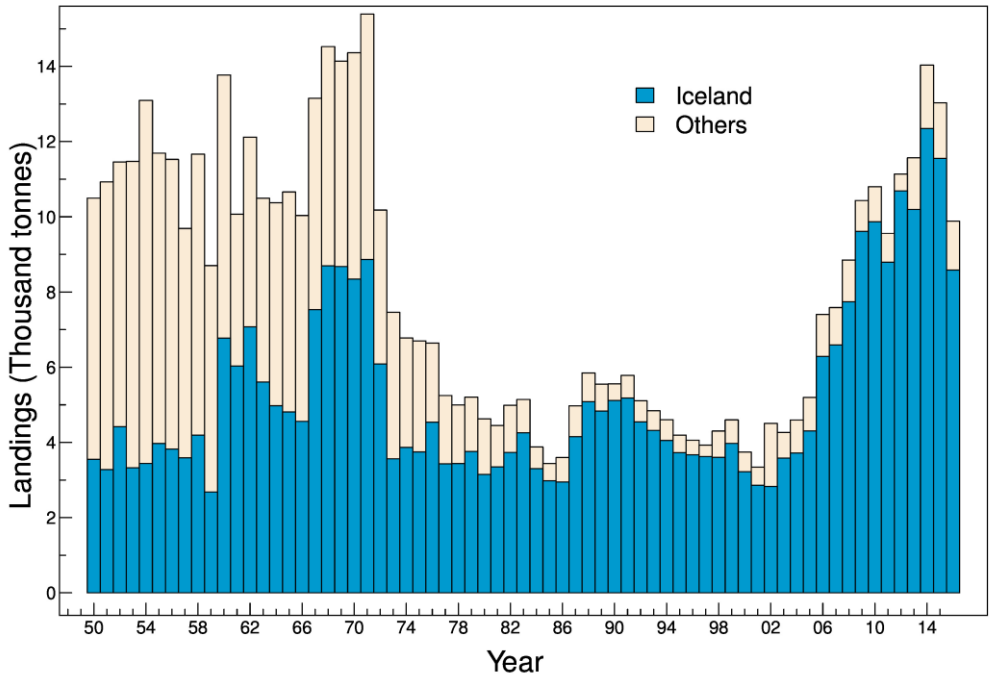

Figure 4.4.4. Ling in 5.a. Nominal landings.

4.4.4 Management

The Icelandic Ministry of Industries and Innovation (MII) is responsible for management of the Icelandic fisheries and implementation of legislation. The Ministry issues regulations for commercial fishing for each fishing year (1 September–31 August), including an allocation of the TAC for each stock subject to such limitations. Ling in 5.a has been managed by TAC since the 2001/2002 fishing year.

Landings have exceeded both the advice given by MRI and the set TAC from 2002/2003 to 2012/2013 but amounted to less than two thirds in 2015/2016 (Table 4.4.2). Overshoot in landings in relation to advice/TAC has been decreasing steadily since the 2009/2010 fishing year, with an overshoot of 53% to 35% in 2010/2011, 24% in 2011/2012 and 4% in 2012/2013. The reasons for the implementation errors are transfers of quota share between fishing years, conversion of TAC from one species to another and catches by Norway and the Faroe Islands by bilateral agreement. The level of those catches is known in advance but has until recently not been taken into consideration by the Ministry when allocating TAC to Icelandic vessels. There is no minimum landing size for ling in 5.a.

There are agreements between Iceland, Norway and the Faroe Islands relating to a fishery of vessels in restricted areas within the Icelandic EEZ. Faroese vessels are allowed to fish 5600 t of demersal fish species in Icelandic waters which includes maximum 1200 tonnes of cod and 40 t of Atlantic halibut. The rest of the Faroese demersal fishery in Icelandic waters is mainly directed at tusk, ling and blue ling. Further description of the Icelandic management system can be found in the stock annex.

Table 4.4.2. Advice given by MRI, set national TAC by the Ministry of Fisheries and Agriculture and landings by fishing year (1st of September–31st of August).

Fishing year	MRI-advice	National-TAC	Landings
1999/2000			3961
2000/2001			3451
2001/2002	3000	3000	2968
2002/2003	3000	3000	3715
2003/2004	3000	3000	4608
2004/2005	4000	4000	5238
2005/2006	4500	5000	6961
2006/2007	5000	5000	7617
2007/2008	6000	7000	8560
2008/2009	6000	7000	10 489
2009/2010	6000	7000	10 713
2010/2011	7500	7500	10 095
2011/2012	8800	9000	11 133
2012/2013	12 000	11 500	12 445
2013/2014	14 000	13 500	14 983
2014/2015	14 300	13 800	13 166
2015/2016	16 200	15 000	9769
2016/2017	9343	8143	

4.4.5 Data available

In general sampling is considered good from commercial catches from the main gears (longlines and trawls). The sampling does seem to cover the spatial distribution of catches for longlines and trawls but less so for gillnets. Similarly sampling does seem to follow the temporal distribution of catches (see WGDEEP 2012).

4.4.5.1 Landings and discards

Landings by Icelandic vessels are given by the Icelandic Directorate of Fisheries. Landings of Norwegian and Faroese vessels are given by the Icelandic Coast Guard. Discarding is banned by law in the Icelandic demersal fishery. Based on limited data, discard rates in the Icelandic longline fishery for ling are estimated very low (<1% in either numbers or weight) (WGDEEP, 2011:WD02). Measures in the management system such as converting quota share from one species to another are used by the fleet to a large extent and this is thought to discourage discarding in mixed fisheries. A description of the management system is given in the area overview.

4.4.5.2 Length compositions

An overview of available length measurements is given in Table 4.4.4. Most of the measurements are from longlines. The number of available length measurements has been increasing in recent years in line with increased landings. Length distributions from the Icelandic longline and trawling fleet are presented in Figure 4.4.5.

Table 4.4.4. Ling in 5.a. Number of available length measurements from Icelandic commercial catches.

Year	Longlines	Gillnets	D. Seine	Trawls	Sum
2000	1624	566	0	383	2573
2001	1661	493	0	37	2191
2002	1504	366	0	221	2091
2003	2404	300	0	280	2984
2004	2640	348	46	141	3175
2005	2323	31	101	499	2954
2006	3354	645	0	1558	5557
2007	3661	0	76	400	4137
2008	5847	357	15	969	7188
2009	9014	410	0	966	10 390
2010	7322	57	0	2345	9724
2011	7248	0	150	1995	9393
2012	12 770	85	150	2748	15 753
2013	10 771	267	122	2337	13 497
2014	6448	1286	120	5053	13 610
2015	3315	1563	0	5667	10 545
2016	2483	2039	0	3673	8195

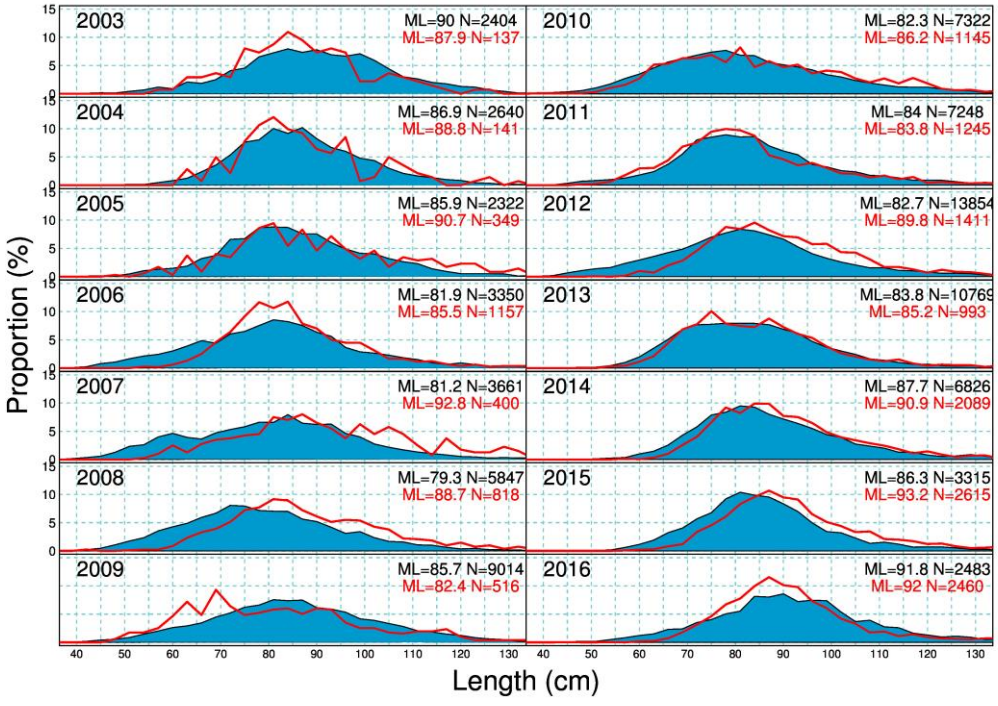

Figure 4.4.5. Ling in 5.a. Length distributions from the Icelandic longline fleet (blue area) and trawls (red lines).

4.4.5.3 Age compositions

A limited number of otoliths collected in 2010 were aged and a considerable difference in growth rates was observed between the older data and the 2010 data (WGDEEP, 2011:WD07). Substantial progress has been made since 2010. Now aged otoliths are available from the 2000 onwards (Table 4.4.5). Most of the ling caught in the Icelandic spring survey is between age 5 and 8 but from longlines the age is between 6 and 9.

Table. 4.4.5. Ling in 5.a. Number of available aged otoliths from the commercial catches.

YEAR	LONGLINES	GILLNETS	D. SEINE	TRAWLS	TOTAL
2000	650	200	0	150	1000
2001	550	193	0	37	780
2002	519	166	0	150	835
2003	900	100	0	150	1150
2004	750	100	46	100	996
2005	750	0	0	231	981
2006	1137	288	0	550	1975
2007	1300	0	50	100	1450
2008	1950	150	0	365	2465
2009	2550	150	0	400	3100
2010	2498	50	0	850	3398
2011	2546	0	50	700	3296
2012	4031	50	50	941	5072
2013	2863	100	50	800	3813
2014	743	225	20	913	1901
2015	595	300	0	1003	1898
2016	440	345	0	680	1465

4.4.5.4 Weight-at-age

No data available.

4.4.5.5 Maturity and natural mortality

No new data available (See stock annex for current estimates).

No information is available on natural mortality of ling in 5.a, set to 0.15 in the analytical assessment.

4.4.5.6 Catch, effort and research vessel data

Catch per unit of effort and effort data from the commercial fleets

The cpue estimates of ling in 5.a have not been considered representative of stock abundance.

Icelandic survey data

Indices: The Icelandic spring groundfish survey, which has been conducted annually in March since 1985, covers the most important distribution area of the ling fishery. In addition, the autumn survey was commenced in 1996 and expanded in 2000 however

a full autumn survey was not conducted in 2011 and therefore the results for 2011 are not presented. A detailed description of the Icelandic spring and autumn groundfish surveys is given in the stock annex.

Figure 4.4.5 shows both a recruitment index and the trends in biomass from both surveys. Length distributions from the spring survey are shown in Figure 4.4.6 (abundance) and changes in spatial distribution the spring survey are presented in Figure 4.4.7.

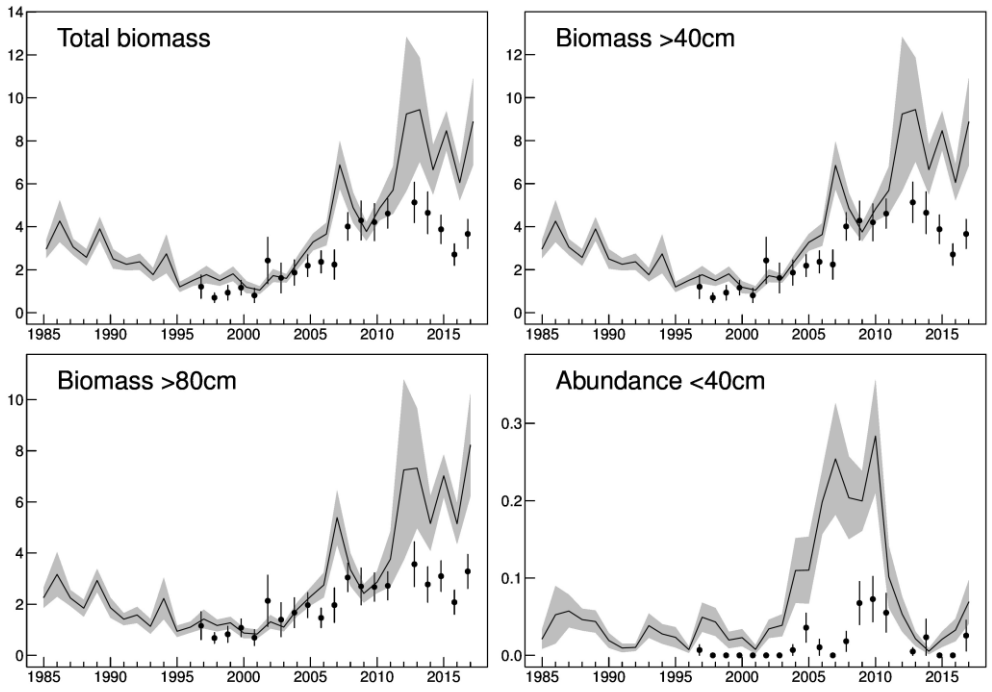

Figure 4.4.5. Ling in 5.a. Shown are a) Total biomass indices, b) biomass indices larger than 40 cm, c) biomass indices larger than 80 cm and d) abundance indices smaller than 40 cm. The lines with shades show the spring survey index from 1985 and the points with the vertical lines show the autumn survey from 1997. The shades and vertical lines indicate +/- standard error.

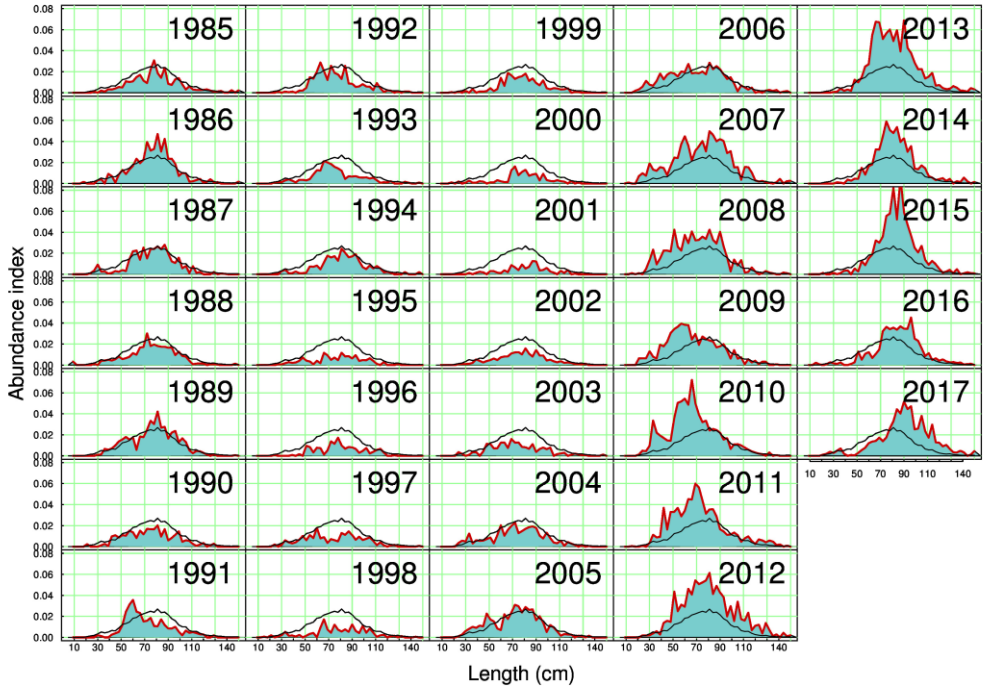

Figure 4.4.6. Ling in 5.a. Abundance indices by length (3 cm grouping) from the spring survey since 1985. Black line is the average over the whole period.

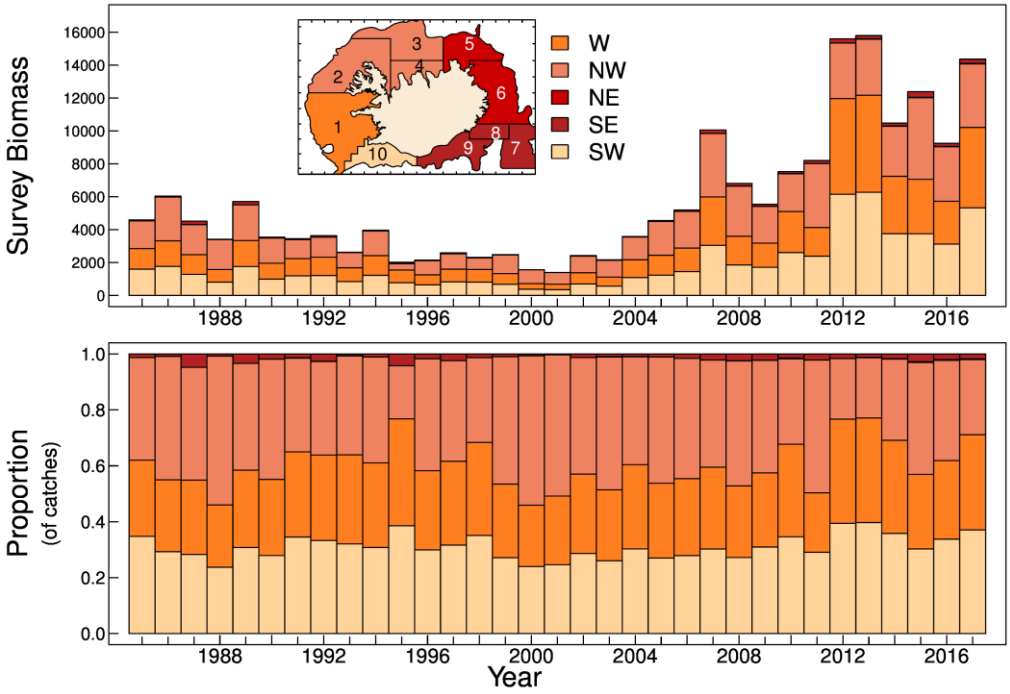

Figure 4.4.7. Ling in 5.a. Estimated survey biomass in the spring survey by year from different parts of the continental shelf (upper figure) and as proportions of the total (lower figure).

4.4.6 Data analyses

There have been no marked changes in the number of boats participating in the ling fishery in 5.a. Most of ling catches are taken at depths less than 250 meters (Figure 4.4.1). Spatial distribution of catches has been similar since 2000 with around 80% of catches caught on the western and southwestern part of the shelf (Figures 4.4.2 and 4.4.3).

Sampling from commercial catches of ling is considered good; both in terms of spatial and temporal distribution of samples in relation to landings (WGDEEP 2012). Mean length as observed in length samples from longliners decreased from 2000 to 2008 from around 91 cm to 80 cm (Figure 4.4.5). This may be the result of increased recruitment in recent years rather than increased fishing effort. Mean length has varied in the period 2009 to 2016 between 82 to 92 cm with no clear trend. It is premature to draw conclusions from the limited age-structured data. It can only be stated that most of the ling caught in the Icelandic spring survey is between age 5 and 9; but from longlines the age is between the ages of 6 to 10.

Ling in both in the spring and autumn surveys are mainly found in the deeper waters south and west off Iceland. Both the total biomass index and the index of the fishable biomass (>40 cm) in the March survey gradually decreased until 1995 (Figure 4.4.5). In the years 1995 to 2003 these indices were half of the mean from 1985–1989. In 2003 to 2007, the indices increased and have been for the last five years the highest in the time-series. The index of the large ling (80 cm and larger) shows similar trend as the total biomass index (Figure 4.4.5). The recruitment index of ling, defined here as ling smaller than 40 cm, also showed a similar increase in 2003 to 2007 and but then decreased by around 25% and remained at that level until 2010. Then the juvenile index fell to a very low level in 2014 but has since then started showing signs of an upward trend (Figure 4.4.5). However the increase in the juvenile index is very uncertain as it is simply some variation in the length distribution of the survey but not a distinct peak (Figure 4.4.6).

The shorter autumn survey shows that biomass indices were low from 1996 to 2000, but have increased since then (Figures 4.4.5). There is a consistency between the two survey series; the autumn survey biomass indices are however derived from substantially fewer ling caught. Also there is an inconsistency in the recruitment indices (<40 cm), where the autumn survey show much lower recruitment, in absolute terms compared with the spring survey (Figure 4.4.5). This discrepancy is likely a result of much lower catchability of small ling (due to different gears) in the autumn survey, where ling less than 40 cm has rarely been caught.

Changes in spatial distribution as observed in surveys: According to the spring survey most of the increase in recent years in ling abundance is in the western area, but an increase can be seen in most areas. However most of the index in terms of biomass comes from the southwestern area or around 40% compared to around 30% between 2003 and 2011. A similar pattern is observed in the autumn survey.

Analytical assessment on Ling using Gadget

In 2014 a model of Ling in 5.a developed in the Gadget framework (see http://www.hafro.is/gadget for further details) was benchmarked for the use in assessment. As part of a Harvest Control Evaluation requested by Iceland this stock was benchmarked in 2017 (WKICEMSE 2017). Several changes were made to the model setup and settings which are described in the Stock Annex.

Data used and model settings

Data used for tuning are given in the stock annex.

Model settings used in the Gadget model for ling in 5.a are described in more detail in the stock annex.

Diagnostics

Observed and predicted proportions by fleet

Overall fit to the predicted proportional length and age–length distributions is close to the observed distributions. (Figures 4.4.7 to 4.4.12). In the initial years of the spring the observed length proportions appear have greater noise in, however as the number of samples caught the noise level decreases. Similarly for gears where only a small portion of the ling catch is caught, such as the gillnet, the overall noise is greater than for those gears with greater number of samples.

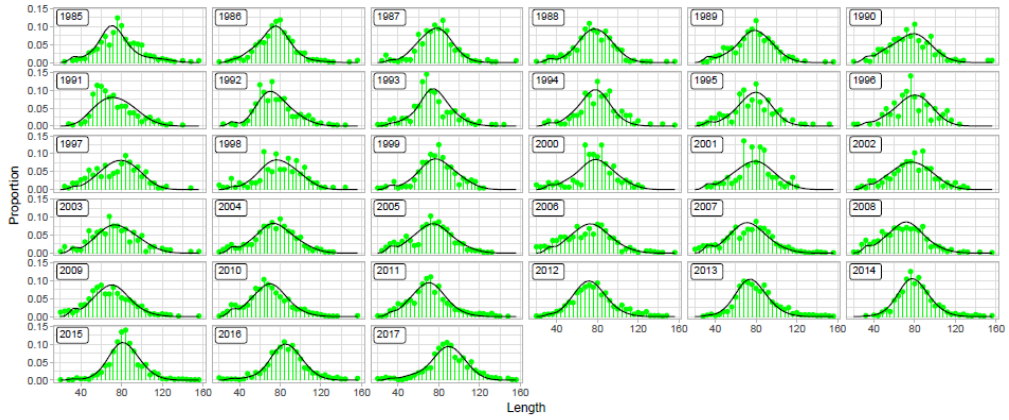

Figure 4.4.7. Ling in 5.a. Fitted proportions-at-length from the Gadget model (black lines) compared to observed proportions in the spring survey (green lines and points).

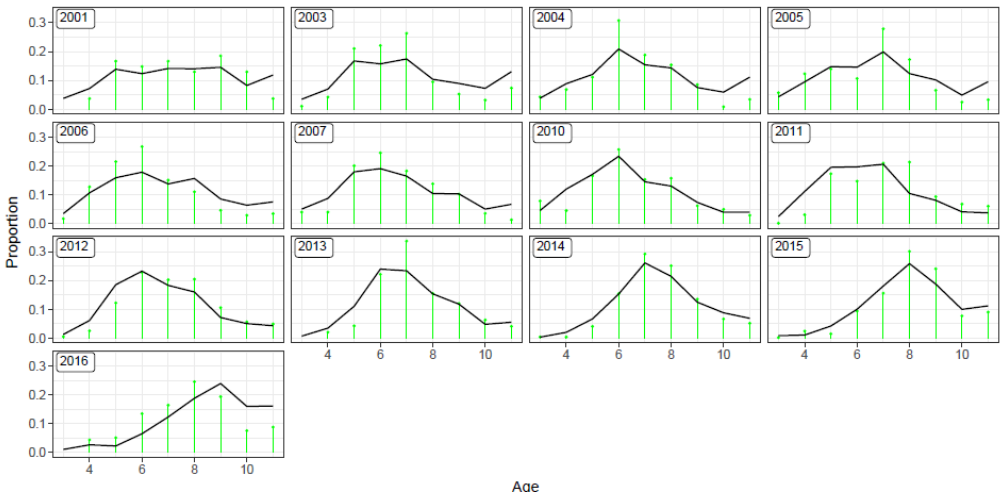

Figure 4.4.8. Ling in 5.a. Fitted proportions-at-age from the Gadget model (black lines) compared to observed proportions in the spring survey catches (green lines and points).

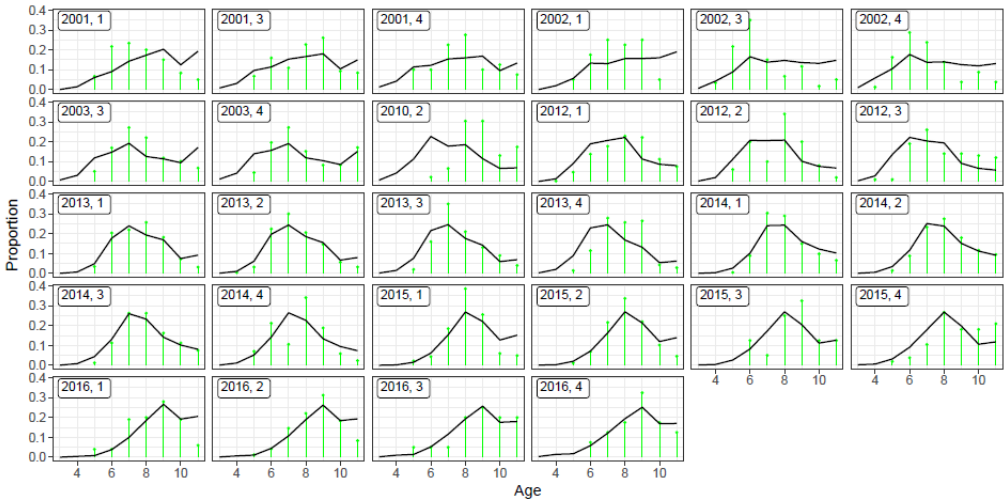

Figure 4.4.9. Ling in 5.a. Fitted proportions-at-age from the Gadget model (black lines) compared to observed proportions in longlines catches (blue lines and points).

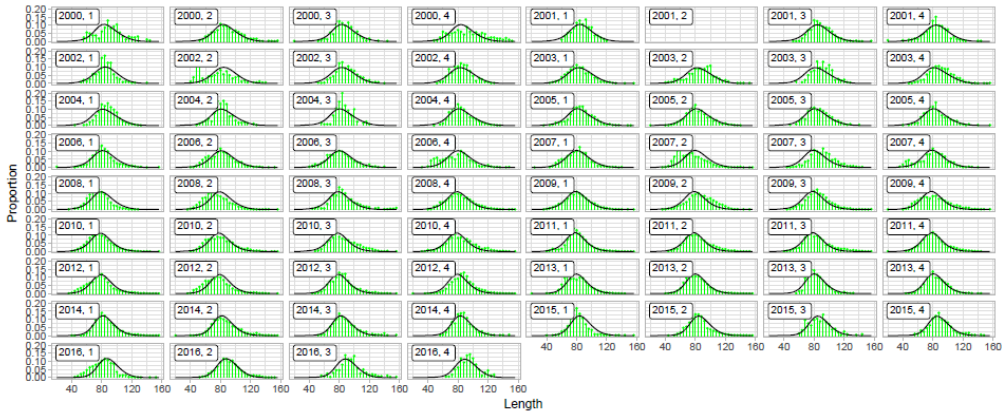

Figure 4.4.10. Ling in 5.a. Fitted proportions-at-length from the Gadget model (black lines) compared to observed proportions from longline catches (green lines and dots).

Model fit

Figure 4.4.13 shows the overall fit to the survey indices described in the stock annex. In general the model appears to follow the stock trends historically. Furthermore the terminal estimate is not seen to deviate substantially from the observed value for most length groups, with model overestimating the abundance in the two largest length groups. Looking at the first three length groups (20–50, 50–60, 60–70) the model appears to discount the recruitment peak observed between 2005 and 2010 as the increase is not observed in the bigger length classes to the same degree. Summed up over survey biomass the model overestimates the biomass in the terminal years.

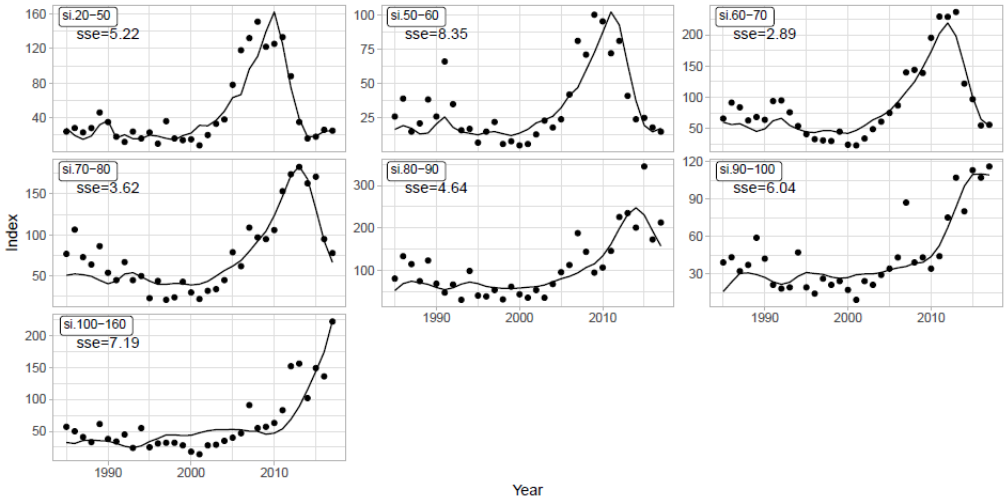

Figure 4.4.13. Fitted spring survey index by length group from the Gadget model (black line) and the observed number of ling caught in the survey (dotted line). The green line indicates the difference between the terminal fit and the observations.

Results

The results are presented in Table 4.4.7 and Figures 4.4.14 and 4.4.16. Recruitment peaked in 2009 to 2010 but has decreased and is estimated in 2013 to 2015 to be at low level. Spawning–stock biomass has increased since 2000 and is now estimated the highest SSB estimate in the time-series. Similarly harvestable biomass is estimated at its highest level in the time-series. Fishing mortality for fully selected ling (age 14–19) has decreased from 0.66 in 2009 to 0.25 in 2015.

This year's assessment shows a downward revision of SSB and an upward revision of fishing mortality compared to the 2014 and 2015 assessments (Figure 4.4.15). The reason for this revision is the 'one-way trip' in the data and as the model is now getting closer to the terminal total survey index there is a downward revision of biomass. Therefore when running an analytical retrospective analysis a very similar pattern is observed (Figure 4.4.16). Nevertheless some slight inconsistencies were found in input data and catches used in the model. The catches in the model have been updated with official ICES catches as presented in Table 4.4.6.

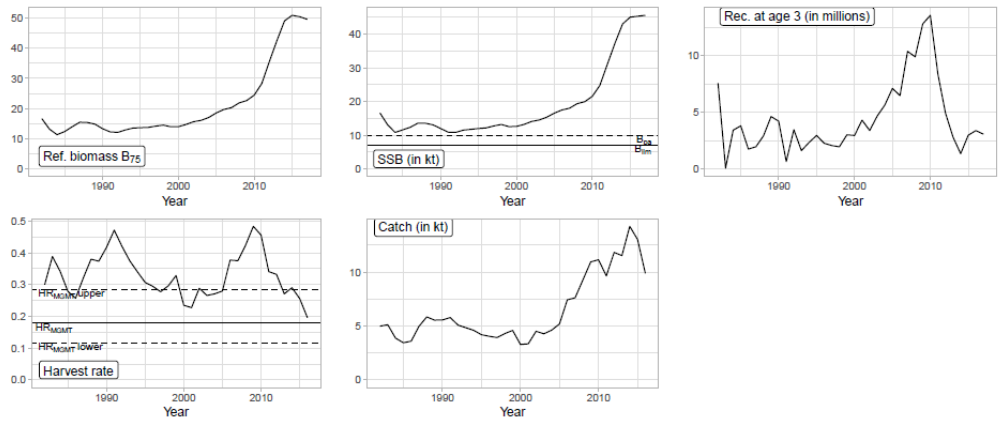

Figure 4.4.14. Ling in 5.a. Estimated recruitment, biomass, fishing mortality and total catches.

Reference points

At the WKDEEP-2014 benchmark meeting for ling in 5.a the following reference points were adopted.

REFERENCE POINT	VALUE	TECHNICAL BASIS
MSY $B_{trigger}$	9.5	Based on B_{pa}
F_{MSY}	0.24	Based on stochastic simulations
B_{lim}	8.6	Median of the lowest SSB
B_{pa}	9.5	Based on the 97.5% quantile of the lowest SSB

As part of the WKICEMSE 2017 HCR evaluations the following reference points were defined for the stock.

Framework	Reference point	Value	Technical basis
MSY approach	MSY $B_{trigger}$	9.93 kt	B_{pa}
	H_{msy}	0.24	The harvest rate that maximises the median long-term catch in stochastic simulations with recruitment drawn from a block bootstrap of historical recruitment scaled according to a hockey stick recruitment function with B_{loss} as defined below.
	F_{msy}	0.284	The median fishing mortality when an harvest rate of H_{msy} is applied.
	$H_{p.05}$	0.497	The harvest rate that has an annual probability of 5% of SSB $< B_lim$.
	$F_{p.05}$	0.516	The median fishing mortality when an harvest rate of $H_{p.05}$ is applied.
Precautionary approach	B_{lim}	7.09 kt	$B_{pa}/e^{1.645\sigma}$ where $\sigma = 0.2$
	B_{pa}	9.93 kt	SSB(1992), corresponding to B_{loss}
	H_{lim}	0.56	H corresponding to 50% long-term probability of SSB $> B_{lim}$
	F_{lim}	0.70	F corresponding to H_{lim}
	F_{pa}	0.41	$F_{lim}/e^{1.645\sigma}$ where $\sigma = 0.33$
	H_{pa}	0.35	H corresponding to F_{pa}
Management plan	H_{mp}	0.18	

The management plan proposed by Iceland is:

> The spawning–stock biomass trigger (MGT $B_{trigger}$) is defined as 9.93 kt, the reference biomass is defined as the biomass of ling 70+ cm and the target harvest rate (HR_{MGT}) is set to 0.18. In the assessment year (Y) the TAC for the next fishing year (September 1 of year Y to August 31 of year Y+1) is calculated as follows:
>
> When SSB_Y is equal or above MGT $B_{trigger}$:
> $TAC_{Y/y+1} = HR_{MGT} * B_{Ref,y}$
>
> When SSB_Y is below MGT $B_{trigger}$:
> $TAC_{Y/y+1} = HR_{MGT} * (SSB_y / \text{MGT } B_{trigger}) * B_{ref,y}$

WKICEMSE 2017 concluded that the HCR was precautionary and in conformity with the ICES MSY approach.

4.4.7 Comments on the assessment

At WKICEMSE 2017 the assessment was benchmarked. Various settings were changed from the previous assessment. Therefore the assessment in 2017 is not directly comparable to previous assessments of this stock.

4.4.7.1 Management considerations

All the signs from commercial catch data and surveys indicate that ling in 5.a is at present in a good state. This is confirmed in the Gadget assessment. However the drop in recruitment since 2010 will result in decrease in sustainable catches in the near future.

Currently the longline and trawl fishery represent 95% of the total fishery, while the remainder is assigned to gillnets. Should those proportions change dramatically, so will the total catches as the selectivity of the gillnet fleet is substantially different from other fleets.

Table 4.4.6. Ling in 5.a. Catches by country (Source STATLANT).

Year	Belgium	Faroe	Germany	Iceland	Norway	UK	Total
1980	445	607	0	3149	423	0	4624
1981	196	489	0	3348	415	0	4448
1982	116	524	0	3733	612	0	4985
1983	128	644	0	4256	115	0	5143
1984	103	450	0	3304	21	0	3878
1985	59	384	0	2980	17	0	3440
1986	88	556	0	2946	4	0	3594
1987	157	657	0	4161	6	0	4981
1988	134	619	0	5098	10	0	5861
1989	95	614	0	4896	5	0	5610
1990	42	399	0	5153	0	0	5594
1991	69	530	0	5206	0	0	5805
1992	34	526	0	4556	0	0	5116
1993	20	501	0	4333	0	0	4854
1994	3	548	0	4049	0	0	4600
1995	0	463	0	3729	0	0	4192
1996	0	358	0	3670	20	0	4048
1997	0	299	0	3634	0	0	3933
1998	0	699	0	3603	0	0	4302
1999	0	500	0	3973	120	1	4594
2000	0	0	0	3196	67	3	3266
2001	0	362	2	2852	116	1	3333
2002	0	1629	0	2779	45	0	4453
2003	0	565	2	3855	108	5	4535
2004	0	739	1	3721	139	0	4600
2005	0	682	1	4311	180	20	5194
2006	0	960	1	6283	158	0	7402
2007	0	807	0	6592	185	0	7584
2008	0	1366	0	7736	176	0	9278
2009	0	1157	0	9610	172	0	10939
2010	0	1095	0	9867	168	0	11130
2011	0	588	0	8743	249	0	9580
2012	0	875	0	10586	248	0	11709
2013	0	1030	0	10121	294	0	11445
2014	0	1524	0	12248	158	0	13930
2015*	0	1095	0	11551	216	0	12862

***Preliminary.**

Table 4.4.7. Ling in 5.a. Results from the Gadget assessment.

Year	Biomass	B40	SSB	Rec3	Catch	HR	F
1982	20.02	16.22	17.38	7.59	4.99	0.32	0.34
1983	19.26	12.60	14.07	0.07	5.12	0.42	0.44
1984	17.60	10.39	10.75	3.43	3.88	0.38	0.41
1985	18.20	10.93	11.12	3.81	3.45	0.32	0.37
1986	19.87	12.48	11.87	1.75	3.60	0.29	0.39
1987	21.16	14.02	13.03	1.96	4.97	0.36	0.50
1988	20.90	13.96	13.48	2.93	5.85	0.43	0.63
1989	19.76	13.55	12.84	4.63	5.55	0.43	0.68
1990	19.52	12.18	12.21	4.22	5.56	0.46	0.66
1991	19.63	11.05	11.01	0.66	5.79	0.53	0.70
1992	18.64	10.61	10.57	3.47	5.09	0.48	0.68
1993	18.72	11.33	11.28	1.62	4.84	0.44	0.70
1994	18.46	12.12	11.34	2.33	4.60	0.39	0.61
1995	18.35	12.42	11.72	2.96	4.20	0.34	0.47
1996	18.71	12.62	12.10	2.27	4.05	0.32	0.42
1997	19.04	13.05	12.45	2.07	3.93	0.30	0.37
1998	19.36	13.34	12.98	1.95	4.30	0.33	0.41
1999	19.13	12.82	12.87	3.02	4.59	0.36	0.44
2000	18.80	12.89	12.58	2.96	3.29	0.26	0.33
2001	19.97	13.62	13.12	4.31	3.35	0.25	0.33
2002	21.85	14.43	13.96	3.40	4.51	0.32	0.38
2003	22.84	14.71	14.18	4.68	4.28	0.29	0.34
2004	24.81	15.47	15.24	5.65	4.62	0.30	0.35
2005	27.36	16.80	16.34	7.12	5.20	0.31	0.37
2006	30.65	17.74	17.59	6.49	7.43	0.42	0.50
2007	32.51	18.03	17.86	10.40	7.62	0.42	0.51
2008	36.32	19.22	19.13	9.92	9.28	0.48	0.56
2009	39.94	19.65	19.97	12.83	10.95	0.56	0.67
2010	44.16	20.94	21.09	13.59	11.15	0.52	0.60
2011	50.31	24.17	23.66	8.38	9.65	0.39	0.43
2012	58.05	30.68	29.66	4.93	11.83	0.38	0.42
2013	62.46	37.27	36.24	2.80	11.54	0.31	0.35
2014	64.98	44.16	42.80	1.35	14.25	0.32	0.39
2015	61.98	47.07	45.25	2.98	13.04	0.28	0.33
2016	58.16	47.78	45.53	3.39	9.88	0.21	0.24
2017	56.01	47.77	45.63	3.07	9.23		